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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/741,804	12/22/2000	Jun Hayakawa	501.39395X00	9059

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EXAMINER

RENNER, CRAIG A

ART UNIT	PAPER NUMBER
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2652

DATE MAILED: 10/21/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/741,804

Applicant(s)

HAYAKAWA ET AL.

Examiner

Craig A. Renner

Art Unit

2652

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3,4 and 6-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3,4 and 6-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 December 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

2. The drawings are objected to because of the following informalities:
 - a. The drawings fail to comply with 37 CFR 1.84(p)(5) because they do not include one or more reference signs mentioned in the description. Note, for instance, "123" (disclosed as a "Co based alloy film" initially in line 24 on page 15, for instance) and "37" (disclosed as a "writing gap" initially in lines 1-2 on page 18, for instance).
 - b. The drawings also fail to comply with 37 CFR 1.84(p)(5) because they include one or more reference signs not mentioned in the description. Note, for instance, "17" (shown in FIG. 4, for instance).

A proposed drawing correction, corrected drawings, and/or amendment to the specification are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

4. The disclosure is objected to because of the following informalities:
 - a. In line 2 of claim 1, "ferromagnetic-pinned layer" should be changed to --ferromagnetic pinned layer-- in order to be consistent with the remainder of the claims.
 - b. In line 2 of claim 3, "1.0 rim" should be changed to --1.0 nm-- for clarity.
 - c. In line 8 of claim 8, "of the recording position" should be deleted for clarity.

Appropriate correction is required.

5. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 9-10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In lines 3-4 in each of claims 9-10, each instance of "the oxide protective layer" is indefinite because it lacks clear and/or proper antecedent basis.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. Claims 1, 3-4 and 6-10 are rejected under 35 U.S.C. 102(e) as being anticipated by Pinarbasi (US 6,268,985).

With respect to claims 1, 3-4, 6-7 and 9, Pinarbasi (US 6,268,985) teaches a magnetic head (40) having a magnetoresistive film (74/500, for instance) comprising an anti-ferromagnetic layer (218), a ferromagnetic pinned layer (206), a non-magnetic intermediate layer (204), a soft magnetic free layer (208), a non-magnetic and conductive film (504), and an oxide layer (506) of metal selected from Ta, Nb, Ti, Hf, W or an alloy thereof (line 65 in column 8 thru line 3 in column 9, for instance, i.e., "Ta") laminated in this order (as shown in FIG. 15, for instance) on a substrate (42) [as per claim 1]; wherein the thickness of the metal oxide layer is 1.0 nm or less (lines 7-8 in column 9, for instance) [as per claim 3]; wherein the intermediate layer coupling field showing the magnitude of the ferromagnetic coupling between the ferromagnetic pinned layer and the soft magnetic free layer is substantially zero (inherently due to the fact that it is structurally identical to that claimed) [as per claims 4 and 6-7]; and wherein the non-

magnetic and conductive film is a non-magnetic and conductive oxidized stopper layer (504) which substantially prevents at least one of diffusion of oxygen from the oxide protective layer and propagation of stresses caused by oxides with respect to the soft magnetic free layer and degradation of a soft magnetic characteristic of the soft magnetic free layer (inherently due to the fact that it is structurally identical to that claimed) [as per claim 9].

With respect to claims 8 and 10, Pinarbasi (US 6,268,985) teaches a magnetic recording apparatus (30) including a magnetic recording medium (34) for recording information, a magnetic head (40) having a magnetoresistive film (72/500, for instance) comprising an anti-ferromagnetic layer (218), a ferromagnetic pinned layer (206), a non-magnetic intermediate layer (204), a soft magnetic free layer (208), a non-magnetic and conductive film (504), and an oxide layer (506) of metal selected from Ta, Nb, Ti, Hf, W or an alloy thereof (line 65 in column 8 thru line 3 in column 9, for instance, i.e., "Ta") laminated in this order (as shown in FIG. 15, for instance) on a substrate (part of 42), a head slider (rest of 42) for holding the magnetic head, an actuator (includes 46) for guiding the head slider to a predetermined recording position of the recording position on the recording medium, a spindle motor (36) rotating the recording medium and a signal processing system (50) for processing information read out of the magnetic recording medium [as per claim 8]; wherein the non-magnetic and conductive film is a non-magnetic and conductive oxidized stopper layer (504) which substantially prevents at least one of diffusion of oxygen from the oxide protective layer and propagation of stresses caused by oxides with respect to the soft magnetic free layer and degradation

of a soft magnetic characteristic of the soft magnetic free layer (inherently due to the fact that it is structurally identical to that claimed) [as per claim 10].

Response to Arguments

10. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

Pertinent Prior Art

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. This includes Pinarbasi (US 6,208,491), Gill (US 6,219,208), and Pinarbasi (US 2003/0086217), which each individually teaches a spin valve with a non-magnetic electrically conductive film and a tantalum-based film formed on a free layer thereof.

Conclusion

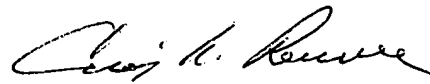
12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Craig A. Renner whose telephone number is (703) 308-0559. The examiner can normally be reached on Tuesday-Friday 7:30 AM - 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa T. Nguyen can be reached on (703) 305-9687. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

A handwritten signature in black ink, appearing to read "Craig A. Renner".

Craig A. Renner
Primary Examiner
Art Unit 2652

CAR